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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/595,005	06/16/2000	James Norman Cawsc	RD-27,442/USA	2521

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EXAMINER

MAHATAN, CHANNING

ART UNIT	PAPER NUMBER
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1631

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

3/19

<b>Office Action Summary</b>	<b>Application No.</b> 09/595,005	<b>Applicant(s)</b> CAWSE ET AL.	
	<b>Examiner</b> Channing S Mahatan	<b>Art Unit</b> 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 and 16-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 16-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### *APPLICANTS' ARGUMENTS*

Applicants' arguments, filed 24 May 2004, have been fully considered but they are not deemed to be persuasive. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

### *CLAIMS UNDER EXAMINATION*

Claims herein under examination are claims 1-12 and 16-21.

### **Claims Rejected Under 35 U.S.C. § 112 1<sup>st</sup> Paragraph**

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

### *NEW MATTER*

Claims 1-12 and 16-21 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 11, 12, and all claims dependent therefrom are rejected under 35 U.S.C. § 112, first paragraph. The claims have been amended to recite the limitation "catalytic turnover number" which is considered new matter. Applicants indicate the "amendments are based on the

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EXAMPLES". However, there does not appear to be support for such a broadly encompassing limitation, wherein the specification provides only the following with respect to "catalytic turnover number":

"Performance is expressed numerically as a catalyst turnover number or TON. TON is defined as the number of moles of aromatic carbonate produced per mole of Palladium catalyst charged."

(pages 14-15, lines 19 and 1-3, respectively, of the Specification)

No further information or definition of "catalyst turnover number" is provided (Refer to below 112 2<sup>nd</sup> Paragraph Rejection). Thus, the amendment of including "catalytic turnover number" is considered NEW MATTER.

### **Claims Rejected Under 35 U.S.C. § 112 2<sup>nd</sup> Paragraph**

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 and 16-21 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

#### *VAGUE AND INDEFINITE*

Claims 1, 11, 12, and all claims dependent therefrom recite the limitation "catalytic turnover number" which is vague and indefinite. The specification provides the following with respect to "catalyst turnover number":

"Performance is expressed numerically as a catalyst turnover number or TON. TON is defined as the number of moles of aromatic carbonate produced per mole of Palladium catalyst charged."

(pages 14-15, lines 19 and 1-3, respectively, of the Specification)

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Since the language “catalytic turnover number” appears to be stated in the alternative form (i.e. “or”) it is unclear if Applicants intend such language “catalytic turnover number” to be defined as only “the number of moles of aromatic carbonate produced per mole of Palladium catalyst charged” or some other definition or calculation, wherein no further information is disclosed. Clarification of the metes and bounds, via clearer claim language, is requested.

### **Claims Rejected Under 35 U.S.C. § 103**

The rejection of claims 1-12 and 16-21 under 35 U.S.C. § 103(a) as being unpatentable over Cong et al. taken in view of Brown et al. is maintained for reasons of record.

Applicants’ argue: 1) no teaching would have led one skilled in the art to combine Cong et al. and Brown et al. on the grounds that Brown et al. does not relate to the discovery of catalysts; and 2) the references provide no teaching or suggestion for “executing a genetic algorithm based on” a “catalyst turnover number”. This is not agreed with.

While it is acknowledged Brown et al. does not specifically direct the described method of designing combinatorial library mixtures utilizing a genetic algorithm to optimize the diversity of libraries to the discovery of catalysts. Brown et al. does disclose: 1) the application of the method to the optimization of any number of physical or other properties of the combinatorial library (catalytic property, catalytic turnover number, halide, etc; Abstract; and pages 2305-2308); and 2) indicates the successful application of genetic algorithms to a wide range of problems in both chemical and non-chemical domains and discloses the desirability for compounds within a combinatorial mixture library to be as diverse as possible thereby fully exploring the scope of activity against the target (page 2304, left column, lines 1-4). Cong et al.

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discloses the determination of the oxidation of CO (indication of the reaction rate of the catalyst) for the assessment of the catalyst (i.e. platinum, palladium, copper, etc; pages 485-486). Thus, Brown et al. provides motivation to combine the disclosed genetic algorithm based on “any physical or other properties of the combinatorial library” in a combinatorial library with the high-throughput synthesis and screening method of combinatorial heterogeneous catalyst libraries of Cong et al., wherein Cong et al. determines a catalytic property (i.e. reaction rate or catalytic turnover number) of the catalysts within the combinatorial library.

The rejection of claims 1-12 and 16-21 under 35 U.S.C. § 103(a) as being unpatentable over Nan et al. taken in view of Brown et al. is maintained for reasons of record.

Applicants’ argue: 1) no teaching would have led one skilled in the art to combine Nan et al. and Brown et al. on the grounds that Brown et al. does not relate to the discovery of catalysts; and 2) the references provide no teaching or suggestion for “executing a genetic algorithm based on” a “catalyst turnover number”. This is not agreed with.

Brown et al. is herein applied from above. Nan et al. indicates the turnover (catalytic turnover number) of the base, the palladium, and oxidative agent is paramount to the identification and evaluation of the success of the reaction during the cycles of the described method (page 298, right column, lines 1-46; and Figure 2). Thus, Brown et al. provides motivation to combine the disclosed genetic algorithm based on “any physical or other properties of the combinatorial library” in a combinatorial library with either combinatorial library catalyst synthesis method of Nan et al., wherein Nan et al. determines a catalytic property of the combinatorial library (catalytic turnover number).

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*ACTION IS FINAL AS NECESSITATED BY AMENDMENT*

Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 C.F.R. § 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**No Claims Are Allowed.**

*EXAMINER INFORMATION*

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 C.F.R. § 1.6(d)). The CM1 Fax Center number is either (703) 872-9306.

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Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Channing S. Mahatan whose telephone number is (571) 272-0717. The Examiner can normally be reached on M-F (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Woodward, Ph.D., can be reached on (571) 272-0722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

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Date: *August 4, 2004*

Examiner Initials: *CSM*

*Marianne P. Allen*

MARIANNE P. ALLEN  
PRIMARY EXAMINER

*8/5/04*

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